North Carolina.—Charlotte: the storm of the 19th was very destructive at a colored settlement known as Philadelphia, situated about two miles from Rockingham, on the Carolina Central railroad. The settlement contained about twenty-five cabins, which were all destroyed, and eleven of their occupants were killed. The trees in that vicinity were uprooted or twisted off and carried long distances.

Ohio.—Cleveland: during the storm on the 20th (low area ix.), trees were prostrated and telegraphic communication was interrupted; maximum wind velocity, 39 miles.

Coshocton, Coshocton county: a violent wind and rain storm (low area ix.) occurred on the 19th, doing great damage to trees and buildings.

South Carolina.—Ninety-six, Abbeville county: a dwelling was blown down and one of the inmates killed during the storm of the 19th.

At Andersonville, Anderson county, two persons were killed. At Jackson, Aiken county a dwelling and store-house were demolished and five persons killed.

Columbia, Richland county: the storms of the 19th were the most destructive ever experienced. At Chester, Chester county, more than forty houses and two churches were blown down, and a number of persons were killed. At Chappell's, Newberry county, on the line of the Greenville and Columbia railroad, not a house was left standing. At that place three freight cars were lifted from the railroad track and carried a distance of fifty yards. At Darlington, Darlington county, a large number of dwellings were wrecked, six persons were killed, and from twenty to thirty were injured.

Stateburg, Sumter county: between 10.30 and 11 p. m. of the 19th, a tornado passed within three miles of this place in a direction from southwest to northeast, blowing down trees and houses.

Tennessee.—Clarksville, Montgomery county: on the afternoon of the 19th this place was visited by two destructive storms, occurring about two hours apart. They passed through the central part of the city, levelling many dwellings and causing injury to others.

Knoxville: the storm on the night of the 19–20th is reported to have been very destructive at points along the railroad.

Texas.—Waco, McLennan county: at about 4 a. m. of the 12th a severe storm swept over this place, doing considerable damage to property.

Galveston: during a norther (low area xiv.) on the 27th the wind reached a velocity of 42 miles per hour, causing some light damage to shipping interests.

Virginia.—Marion, Smyth county: a severe storm occurred on the night of the 13–14th, blowing down trees, chimneys, etc.

SAND STORMS.

Yuma, Arizona, 18th.

NAVIGATION.

STAGE OF WATER IN RIVERS.

The Mississippi river continued frozen during the month at Keokuk, Iowa, and at stations northward. It was highest at Saint Louis, Missouri, on the 19th, and at New Orleans, Louisiana, on the 28th; at the latter station it reached a point one foot and one inch above the danger line.

Under the heading of "floods" will be found a table showing the stages of water for each day in the Ohio river at Pittsburg, Pennsylvania; Cincinnati, Ohio, and Louisville, Kentucky, and in the Mississippi river at Cairo, Illinois; Memphis, Tennessee, and Vicksburg, Mississippi.

The Missouri river was frozen from the 1st to 25th at Leavenworth, Kansas, and throughout the month at Omaha, Nebraska, and at stations northward.

The Red river reached its highest stage at Shreveport, Louisiana, on the 27th, when it was two feet and ten inches above the danger line.

At Chattanooga, the Tennessee river reached a point three feet and ten inches above the danger line on the 11th.

The Cumberland river at Nashville, Tennessee, reached its highest stage on the 28th, when it was four feet and eleven inches above the danger line.

In the following table are shown the danger points at the various river stations; the highest and lowest stages for February, 1884, with the dates of occurrence; and the monthly ranges:

Heights of rivers above low-water mark, February, 1884.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:	Ft. In.		Ft. In.		Ft. In.	Ft. In.
Shreveport, Louisiana	29 9	27	32 7	6	9 3	23 4
Arkansas:						
Little Rock, Arkansas	33 0	16	26 3	1	4 3	22 0
Fort Smith, Arkansas	.....	14	21 0	2	—1 7/8	22 7
Missouri:						
Yankton, Dakota †	20 0	.....	.....	.....	.....	.....
Omaha, Nebraska †	16 0	.....	.....	.....	.....	.....
Leavenworth, Kansas‡	21 0	26	5 6	28	5 1	0 5
Mississippi:						
Saint Paul, Minnesota †	14 6	.....	.....	.....	.....	.....
La Crosse, Wisconsin †	18 0	.....	.....	.....	.....	.....
Dubuque, Iowa †	21 10	.....	.....	.....	.....	.....
Davenport, Iowa †	15 0	.....	.....	.....	.....	.....
Keokuk, Iowa †	14 6	.....	.....	.....	.....	.....
Saint Louis, Missouri	30 0	19	15 9	2	8 11	6 10
Cairo, Illinois	40 0	21, 22, 24	51 10	1	25 8	26 2
Memphis, Tennessee	34 0	29	35 1	1	19 2	15 11
Vicksburg, Mississippi	41 0	29	44 11	6	30 8	14 3
New Orleans, Louisiana *	—2 6	28	— 1 5	10	— 5 6	4 1
Ohio:						
Pittsburg, Pennsylvania	20 0	6	33 4	29	6 4	27 0
Cincinnati, Ohio	50 0	14	71 3/4	29	26 2	44 10 3/4
Louisville, Kentucky	24 0	15, 16	46 7	29	10 10	35 9
Cumberland:						
Nashville, Tennessee	42 0	15	46 11	28	15 6	31 5
Tennessee:						
Chattanooga, Tennessee	33 0	11	36 10	29	9 7	27 3
Monongahela:						
Pittsburg, Pennsylvania	29 0	6	33 4	29	6 4	27 0
Savannah:						
Augusta, Georgia	.....	18	22 6	7, 8	7 0	15 6
Willamette:						
Portland, Oregon	.....	25	12 0	12, 13	1 5	10 7
Sacramento:						
Red Bluff, California	.....	18	8 0	13, 14, 15	1 3	6 9
Sacramento, California	.....	18	17 7	15	10 1	7 6
Mobile:						
Mobile, Alabama	.....	19	16 8	20	14 1	2 7
Colorado:						
Yuma, Arizona	.....	12	21 3	1	14 5	6 10

* Below high-water mark of 1874 and 1883. † Frozen throughout the month. ‡ Frozen part of month; see text. § below bench-mark.

ICE IN RIVERS AND HARBORS.

Broad lake.—Burlington, Vermont: the lake continues frozen from the 1st to 29th. Towards the close of the month a partial breaking up occurred in the Winooski and other rivers in this section.

Taunton river.—Taunton, Massachusetts: the river became free of ice on the 20th.

Connecticut river.—New Haven, Connecticut: ice in the river broke on the 20th.

Hudson river.—Albany, New York: the ice opposite Troy broke on the 8th, and the river became clear of ice for a distance of about one mile. Considerable damage was done to the bridge and other property along the docks. On the 14th, the ice broke at Albany and moved down the river forming an ice-dam at a point two miles below the city. The water rose rapidly and flooded the docks and lower parts of the city. The ice-dam was still intact on the 20th.

Salem creek.—Salem, Salem county, New Jersey: during the winter, the ice in the creek reached a thickness of ten inches. On the 18th, the creek was clear of ice, and navigation was resumed.

Lackawanna river.—Millville Depot, Lake county, Pennsylvania: ice broke up and went out of the river during the 7th and 8th.

Susquehanna river.—Port Deposit, Maryland: on the 8th, the solid field of ice which extended from this place to within a short distance of Havre de Grace gave way and passed out of the river into the bay.

Susquehanna river, (north branch).—Wilkesbarre, Pennsylvania: ice broke on the afternoon of the 7th, and the river rose

seventeen feet during the succeeding twelve hours. The flats between this city and Kingston were covered to a depth of twelve feet with large cakes of ice. The ice passed out without forming a serious ice-dam and the river subsided rapidly.

Catawissa, Columbia county, Pennsylvania: on the evening of the 7th, the ice broke up and went out of the river, without causing serious damage.

Delaware river.—Port Jervis, Orange county, New York: the ice broke up and went out of the river on the 7th.

Ohio river.—Pittsburg, Pennsylvania: the ice from the Youghiogheny river formed an ice-dam at the Smithfield street bridge, on the 5th. It broke and moved out on the same day, without causing damage. Heavy masses of drift-ice passed the city on the 7th; floating ice on the 2d, 5th, 8th and 29th.

Oswego river.—Oswego, New York: the ice began to break up on the 8th; floating ice on the 10th.

Genesee river.—Rochester, New York: the ice moved slightly on the 2d.

Lake Erie.—Buffalo, New York: considerable ice was broken up by the winds on the 14th, 20th and 21st.

Detroit river.—Detroit, Michigan: on the 3d, the river was clear of ice, except along the shores; floating ice on the 14th, and 27th; river frozen over on 29th.

Lake Michigan.—Milwaukee, Wisconsin, 29th: during the month, steamers plying between this place and ports on the opposite shore of the lake were much inconvenienced by ice. Several boats were surrounded by the ice-fields, and drifted with them for from four to five days.

Grand Haven, Michigan: the propellers "Michigan" and "Wisconsin" which were fast in the ice on the 1st and 2d, succeeded in reaching the harbor on the 3d. On the 4th the entrance to the harbor was free of ice; on the 22d it was again blockaded; on the 27th the propeller "Wisconsin" effected an entrance to the harbor.

Manistique, Schoolcraft county, Michigan: harbor open on 2d; lake open on 25th, and closed on 28th.

Grand river.—Grand Haven, Michigan: the river opened during the night of the 11–12th.

Green bay.—Escanaba, Michigan: the bay continued frozen during the month.

Saint Joseph river.—Mottville, Saint Joseph county, Michigan: ice broke in river on the 5th.

Maumee river and bay.—Toledo, Ohio: on the 6th the ice from the bay to the Lake Shore railroad bridge, was from nine to fourteen inches in thickness and was solid from shore to shore. On the 8th the ice in the river opposite the city began to break. At south Toledo a large ice-dam formed, and the water rose four feet above the high-water mark of 1883. Large masses of ice were running beneath the surface ice. On the 15th the river began to fall, and drift-ice was running. On the 25th the ice above the bridges began to break up; but it was again solid from shore to shore on the 28th.

Tuscarawas river.—Canal Dover, Tuscarawas county, Ohio: the ice broke up on the afternoon of the 5th, causing slight damage.

Cuyahoga river.—Cleveland, Ohio: the ice broke up and went out of the river on the 5th, causing no damage.

Sandusky river.—Fremont, Ohio: the ice-dam in the river, above town, broke on the morning of the 6th, but formed again about one-half mile below, flooding the Wheeling and Lake Erie railroad track and submerging the flats on the east side.

Auglaize river.—Defiance, Ohio: ice began to move out of the river at 3 p. m. of the 6th. An ice-dam was formed in the Maumee river about one mile below here. At 4.30 p. m. the ice-dam gave way, causing but little damage. The ice in the Maumee above this place remained firm.

Conneaut river.—Conneaut, Ohio: the ice in the river broke up and went out on the 6th. The dam at Rathburn's mill was broken and other damage resulted.

Wabash river.—Logansport, Indiana: on the 5th the ice broke up and went out of the river without causing damage.

Mississippi river.—Saint Louis, Missouri: floating ice on the 8th, 14th, 15th, and 16th. At Keokuk and points above, the river continued frozen throughout the month.

Missouri river.—Leavenworth, Kansas: on the 28th the river opposite the city was nearly clear of ice; opposite Fort Leavenworth it remained firm. At points above this place the river continued frozen throughout the month.

Republican river.—Red Willow, Red Willow county, Nebraska: the ice in the river and in Red Willow creek was partly broken up on the 25th.

Snake river.—Lewiston, Idaho: the ice in the river broke up on the 24th.

Spokane river.—Fort Spokane, Washington territory: the river was frozen on the 7th.

Miscellaneous.—Thornville, Lapeer county, Michigan: at the close of the month the ice in the ponds in this vicinty was about eighteen inches thick.

Garrettsville, Portage county, Ohio: the ice in Silver creek broke up on the 5th.

FLOODS.

During the flood of February, 1883, in the Ohio river, the water rose above the highest water marks of any previous record in the vicinity of Cincinnati and at points southward. The flood of February, 1884, in the Ohio river, surpassed that of February, 1883. At Pittsburg, Pennsylvania, the highest stage of water was five feet, ten inches above that of 1883; at Cincinnati, four feet, eight and three-fourths inches; at Louisville, Kentucky, two feet, two inches, while the Mississippi river at Cairo, Illinois, during 1883, was four inches higher than the highest point of February, 1884; and at Memphis it was six inches higher. In the lower Mississippi, the water rose to a greater height than was attained in February of last year. At Vicksburg, the river was still rising at the close of the month and was nearly three feet higher than the highest stage of February, 1883, and at New Orleans it was one foot, seven inches higher.

In the table below are shown the stages of water in the Ohio river and at stations on the lower Mississippi during February, 1884, the observations being made at 2 p. m. Washington time.

	Ohio River.						Mississippi River.					
Station.....	Pittsburg.		Cincinnati.		Louisville.		Cairo.		Memphis.		Vicksburg.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Danger-point.....	20	0	50	0	24	0	40	0	34	0	41	0
February 1.....	20	5	38	8	13	7	25	8	19	2	31	11
2.....	17	4	46	2	16	10	26	6	19	3	31	8
3.....	12	10	49	5	21	7	29	5	19	5	31	4
4.....	11	1	49	11	24	0	32	5	19	11	31	1
5.....	15	10	52	8	27	8	34	7	21	9	30	10
6.....	*31	11	59	5	34	1	37	10	24	4	30	8
7.....	31	8	61	8	38	5	40	10	26	3	31	1
8.....	26	3	62	7	39	8	42	8	28	5	32	4
9.....	21	3	63	9	40	3	44	0	30	0	33	7
10.....	18	5	64	11	40	4	45	1	31	3	35	6
11.....	16	11	66	5	41	1	46	0	32	0	37	0
12.....	18	4	68	5	42	4	46	10	32	4	38	2
13.....	18	0	69	11	44	0	47	7	32	10	39	4
14.....	17	10	71	3/4	45	7	48	4	33	2	40	4
15.....	20	10	70	1	46	6	49	2	33	6	40	11
16.....	17	11	68	4	46	6	49	10	33	9	41	6
17.....	14	3	66	0	45	8	50	5	34	2	42	0
18.....	12	9	63	5	44	5	50	10	34	3	42	7
19.....	13	3	60	3	42	6	51	3	34	5	43	1
20.....	12	0	58	10	41	3	51	7	34	6	43	4
21.....	12	6	55	5	39	1	51	9	34	7	43	7
22.....	11	5	52	0	36	1	51	10	34	10	43	10
23.....	10	1	48	5	32	11	51	10	34	10	44	1
24.....	9	0	45	2	29	0	51	10	34	10	44	3
25.....	8	1	40	10	24	8	51	8	34	11	44	5
26.....	7	6	36	10	19	9	51	5	34	10	44	7
27.....	7	2	32	11	15	2	51	2	34	11	44	9
28.....	6	10	29	6	11	4	50	7	34	11	44	10
29.....	6	4	26	2	10	10	50	0	35	1	44	11

* At 10 p. m. of the 6th, gauge read 33 feet 4 inches.

From the above table it will be seen that at Pittsburg the river was above the danger from the 5th to the 9th; at Cincinnati, from the 5th to 22d; at Louisville, from the 4th to 25th; at Cairo, Memphis and Vicksburg from the 7th, 17th and 16th, respectively, to the end of the month.

In the following table are given the highest and lowest stages of water at stations on the Ohio and lower Mississippi rivers, during the February floods of 1883 and 1884.

Ohio River.

Station.	Pittsburg.				Cincinnati.				Louisville.			
	Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.	
	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.
Feb., 1883	8	27 6	3	5 6	15	56 4	3	26 10	16	44 5	3	11 2
Feb., 1884	6	33 4	29	6 4	14	71 3/4	29	26 2	15, 16	46 7	29	10 10
Danger-line	20 feet.				50 feet.				24 feet.			

Mississippi River.

Station.	Cairo.				Memphis.				Vicksburg.			
	Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.	
	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.	Date.	Height.
Feb., 1883	26,27	52 2	6	28 11	28	35 7	1 to 5	22 11	28	42 2	1	24 7
Feb., 1884	21,22, 24	51 10	1	25 8	29	35 1	1	19 2	29	44 11	6	30 8
Danger-line	40 feet.				34 feet.				41 feet.			

The following reports relative to the flood of February, 1884, in the Ohio, and in the Mississippi river below Cairo, Illinois, have been received from various sources. The reports from the several stations are given in the order in which they would be successively passed in proceding southward from Pittsburg, Pennsylvania.

Pittsburg, Pennsylvania.—During the morning of the 5th, both the Monongahela and Allegheny rivers began to rise rapidly, the Monongahela reaching the danger line about noon. At 11 p. m. of the 6th it reached its maximum height, thirty-three feet, four inches, or thirteen feet, four inches above the danger line. This is the highest stage that has occurred since 1832, when it reached thirty-five feet. All the avenues in the lower portions of Pittsburg and Allegheny City were flooded. Both cities were without gas, and railroad communication was cut off. As a result of this flood over five thousand people were rendered temporarily homeless, and property valued at more than $2,000,000 was destroyed. On the 7th a large part of Allegheny City was still under water, but in Pittsburg, on that date, only the cellars were flooded. On the 8th, people returned to their homes in the submerged districts, operations were resumed on the railroads, and the city gas supply was restored. At 10.30 p. m. of the 9th the river fell below the danger line.

Wellsville, Columbiana county, Ohio.—On the 9th the river began to recede rapidly, but the water was still from five to eight feet deep in the lower part of the town. From 1,500 to 2,000 people of this place sustained losses by the flood, many losing their entire possessions. At Industry, Pennsylvania (near Wellsville), eight dwellings were carried away and a number of others were ruined.

Wellsburg, Brooke county, West Virginia.—On the 7th the Ohio river reached the greatest height ever known at this point, when it was thirty-three inches higher than the great flood of 1883. The loss of property, distress, and destitution resulting from the flood were very great. There were only three or four houses in the main part of the town that were not partly under water. The assistance from the government was timely, and relieved many destitute and suffering people.

Steubenville, Jefferson county, Ohio.—At 6 p. m. of the 6th the river reached a depth of forty-four feet, when all the lower portions of the city were submerged and many families had to be removed from their homes. The Cleveland and Pittsburg railroad company were compelled to discontinue operations from Pittsburg to Bellaire for the first time in the history of the road, several miles of the track being under water. All creeks in this vicinity overflowed, rendering many families homeless. The river reached its highest point, forty-nine feet, at 2 p. m. of the 7th, when it was two feet higher than the flood of 1842. The river began to recede on the morning of the 8th. The entire loss resulting from the flood in the vicinity of Steubenville is estimated at $500,000. More than three hundred families were rendered homeless. At 7 p. m. of the 9th the river had fallen eighteen inches.

Wheeling, West Virginia.—The river continued to rise during the 7th. On that date the submerged area was considerably larger during the flood of 1832. Property valued at about $1,000,000 was destroyed in that vicinity. On the 8th, it was reported that in this city and on both sides of the river, from Wellsburg (sixteen miles above) to Madisonville (twelve miles below), the lowest estimate of the number of persons homeless and subsisting on charity was 25,000, and the damage to property, $6,000,000. On that date the water reached a depth of six feet above the high water mark of 1852. The river fell rapidly on the 10th.

Reports from Marietta, Ohio, on the 10th, stated that about three-fourths of that place was inundated and a large number of houses had been swept away. On the 18th, it was shown from actual count that four hundred and fifty houses and barns had been moved from their foundations.

Parkersburg, West Virginia.—The flood began to subside on the 11th. When at its highest stage, fifty-three feet, three inches, the river was more than three feet higher than the flood of 1883. For three days this city was entirely cut off from outside communication. Thousands of people were rendered homeless and were quartered in the churches and the public buildings. More than one hundred houses were carried away and many others were undermined. Thirty-seven cars of the Ohio River Railroad Company were swept away. On the 12th, it was estimated that the losses sustained at Parkersburg would aggregate $750,000.

Belpre, Washington county, Ohio.—The river reached a height of sixteen inches above any previous flood on the 10th. More than twenty dwellings were floated away and all of the business part of the town was submerged. On the 12th a careful count of the houses washed away, showed the number to have been forty-nine. On that date the water had fallen about nine feet, but much of the town was still under water.

Pomeroy, Meigs county, Ohio.—On the 6th the river reached a height of forty-seven feet and continued to rise. The yards of the Columbus, Hocking valley and Toledo railroad company were covered with five feet of water. Business was generally suspended.

Gallipolis, Gallia county, Ohio.—At 6 p. m. of the 8th the river was twenty-six inches above the highest point of the flood of 1883, and continued rising. The river rose steadily during the 10th, on which date it was fifty-one inches above the flood of 1832. The lower part of the city was submerged, and many families were compelled to move. The river began to fall at 1 a. m. of the 12th.

Catlettsburg, Boyd county, Kentucky.—The river continued to rise during the 8th, on which date about fifty business houses and one hundred and twenty-five residences were submerged. The court-houses and other public buildings were thrown open for those rendered homeless. At 6 p. m. the water was within ten inches of the high-water of February, 1883, and on the evening of the 9th it had risen to two feet above that point. Fifty residences were submerged that escaped the flood of last year. Every business house in the town, and four-fifths of the residences, were flooded. It is estimated that $100,000 will not cover the losses sustained. On the 10th the river was three feet above the highest point of 1883. On that date there were one hundred and fifty residences from three to

twelve feet under water, and sixty business houses were submerged, leaving only twenty houses in the town above the water line.

Ashland, Boyd county, Kentucky.—The river reached its highest point on the 12th, when it was seven feet, ten inches above high water of 1883. One half of Ashland was inundated and hundreds of families were driven from their homes. On the 15th, the river had fallen about six feet and continued to recede slowly after that date.

Ironton, Lawrence county, Ohio.—Telegraphic and railroad communication was cut off from the 7th to 15th. When at its height the flood covered four-fifths of the city. Many houses were swept away or moved from their foundations.

Portsmouth, Ohio.—The river reached a height of fifty-three feet on the 6th, causing about four hundred families to leave their homes on the afternoon of that date. During the night of the 6–7th the entire southeastern part of the city was flooded and hundreds of people were sheltered in the school houses and other public buildings. At noon of the 9th, the river was within one inch of the flood of 1832. It continued to rise until 6.30 p. m. of the 12th when it was sixty-six feet, three and one-half inches above low-water; four feet, seven inches above the flood of 1832; and five feet, nine inches above the flood of 1883. Nearly the whole of the city was under water and many houses near the river were washed away. The storm of the night of the 13th caused great damage to the inundated buildings.

Maysville, Mason county, Kentucky.—On the 6th, it was apparent that the flood in the Ohio would exceed that of 1883. Several families on Front street were compelled to abandon their homes. On the 8th, the river was within seventeen inches of the high water of 1883. At 10 a. m. of the 9th, it reached the high-water mark of 1883, at which time it was within from two to three inches of the great flood of 1832. About two hundred families in Maysville, Chester and Aberdeen were driven from their homes.

Ripley, Brown county, Ohio.—On the 14th, fully four-fifths of the town were submerged. On all of the principal streets the water was from five to fifteen feet deep. On Front street, the houses were abandoned, and under water to the second stories. The losses resulting from the flood were fully as great as those sustained last year. Many houses were swept from their foundations, and about two hundred families were rendered homeless.

Dayton, Campbell county, Kentucky.—Fully two-thirds of the town were under water on the 14th, when about four hundred and fifty houses were submerged and about six hundred families were dependent on charity. On the 16th it was estimated that this town had suffered to the extent of $75,000.

Cincinnati, Ohio.—The river rose to the danger-line on the afternoon of the 4th. During the twenty-fours ending at 1.30 a. m. of the 6th it rose six feet, nine inches. On the 5th and 6th active preparations were made for removing property out of danger by the residents and others engaged in business along the river front. The following warning was given the public on the 6th by the Chief Signal Officer:

OFFICE CHIEF SIGNAL OFFICER,
Washington, D. C., February 6, 1884.

From two to three inches of rain is reported in the Ohio valley during the last twenty-four hours. The river is rising rapidly at all points. Seven to eight feet above the danger-line at all points from Louisville northward. Floods will increase and prove very destructive. Give general warning. Property and stock should be moved to points above the danger-line. Floods will reach the Mississippi early next week.

W. B. HAZEN,
Chief Signal Officer.

On the 6th the chamber of commerce and city council took measures for the relief of those rendered needy, and large sums of money were raised by appropriation and subscription. Along the bank of the river, on Eastern avenue, all dwellings were submerged and abandoned. The whole area from McLean avenue to the foot of Price's hill, and from Duckworth's distillery to the mouth of Mill creek, was covered with water. All buildings below the level of Eighth street were submerged, and also the lower part of Cumminsville, compelling hundreds of families to vacate the lower stories of their dwellings. In Newport, Kentucky, it was estimated that more than one thousand houses were under water.

On the 9th, at 1.30 p. m., the river-gauge showed a depth of sixty-three feet, nine inches, or thirteen feet, nine inches above the danger-line. Mill creek on this date was nearly a mile wide in some places, and at noon the water reached the middle of Spring Grove cemetery. On Broadway the water was above Second street. The public schools were closed and the buildings thrown open for the use of the sufferers.

At 1.30 p. m. of the 11th the river had risen to sixty-five feet, five inches, or one inch above the highest point attained by the flood of February, 1883. The gas works were completely submerged, and the manufacture of gas was discontinued. The last engine at the city water works stopped running, and the inhabitants were cautioned to exercise economy in the use of water. In the northwestern part of the city Harrison avenue and the flooring in the Cincinnati, Washington and Baltimore railroad depot were completely covered. At the Duckworth distillery the water reached the second stories of the building. The dwellings and factories on both sides of Harrison avenue up to Western avenue were flooded. At Mill street the water had reached the middle of the square between Third and Fourth streets. The following streets were flooded to depths ranging from two to fifteen feet: Dodsworth avenue, Elmore, Burgoyne, Cooper, Dormann and Hoffner streets. On Colerain pike the water extended from Mill creek bridge to the Cincinnati, Hamilton and Dayton railroad, and on Spring Grove avenue it extended from the bridge to Winton road.

At 2 a. m. of the 12th, the river had attained a depth of sixty-seven feet, six and one-half inches, or one foot, two and one-half inches above the highest point of the flood of last year. Over 5,000 persons were provided with shelter within the city school buildings. Traffic on all of the railroads was interrupted, trains being unable to reach the depots.

A proclamation was issued by the Governor of the state on the 12th, appealing for aid for the sufferers of the flooded districts, and urging the organizations of relief committees.

At 2 a. m. of the 13th the depth of water was sixty-nine feet, two inches—nearly three feet above the maximum height of the flood of 1883. The buildings in the lower portions of Cumminsville were entirely submerged and that suburb was cut off from the city.

In Newport, on this date, only a small portion of the thickly populated part of the city remained out of water. A number of frame houses in the submerged districts were loosened from their foundations and capsized.

At 3 a. m., of the 14th, a height of seventy feet, nine and one-half inches was attained. The suffering among the inhabitants of the inundated districts and the destruction of property became more widespread. The highest stage was reached at 11.30 a. m., when the water was seventy-one feet and three-fourths of an inch above low water (the highest stage ever known), and was four feet, eight and three-fourths inches above the great flood of 1883. The cold weather with the increasing flood caused intense and widespread suffering among those rendered homeless. At Cumminsville, the water extended from the stock yards to Grear's Turf exchange on Spring Grove avenue. At Linwood, the levee was entirely covered with water and Mount Washington and Newton were completely cut off from the city. All passengers leaving the city were conveyed in boats to various points where connection could be made with the railroads. With the increasing flood the condition of Newport grew worse. A large majority of the population of the city were rendered homeless and destitute. Numerous brick houses caved in by having their foundations washed out, while many frame houses were floated away. At 2 p. m., the river had fallen one-half inch, at which stage it remained stationary until 6 p. m.; the decline from that hour until 2 a. m., of the 15th, was three and one-half inches. During the 15th the waters gradually subsided. On that date

the foundations of several buildings were undermined. The most serious disaster of this character occurred during the early morning, on the corner of Third and Ludlow streets, which resulted in the loss of ten lives.

The Signal Service observer at Cincinnati reports, concerning the flood, as follows:

At 11.30 a. m. of the 14th, the Ohio river reached the greatest height ever known; seventy-one feet and three-fourths of an inch being noted on the water-works river gauge. The timely warning given by the Signal Service of the approaching danger, together with the experience of the flood of 1883, enabled the people in a great measure to prepare to meet the danger. The losses, consisting of household goods, were much less than those sustained during the flood of last year, but the damage to buildings, etc., was much greater. In Covington, Kentucky, four hundred houses were invaded by the water, and about 3,000 people received assistance from the relief committees. One-third of Newport, Kentucky, was under water, and 13,000, out of a population of 20,400, were more or less seriously affected by the flood. Navigation on the river was entirely suspended, the high water not permitting the passage of boats under the bridges. Travel on all railroads entering the city was interrupted, and the mails were received very irregularly. All of the engines in the city water-works were stopped, in consequence of which great fears of a water famine were entertained. The Shield's engine was, however, started on the 17th, when the river had fallen to sixty-five feet.

It is not possible at the present time to give an accurate estimate of the damage resulting from the flood, but it is variously estimated at from $10,000,000 to $25,000,000. In February, 1883, the river was above the danger-line from the 8th to the 23d; during the present year it was above the danger-line from February 4th to 23d.

Lawrenceburg, Indiana.—On the 6th, the track of the Ohio and Mississippi railroad, both east and west of the city, was washed away. East of Lawrenceburg, as far as the eye could reach, there was nothing visible but a broad expanse of water covering thousands of acres of valuable land. About fifteen hundred of the population left the city. Up to this date but little damage was done aside from that caused by the inundation. Out of four thousand inhabitants of Old Town all, with the exception of about one hundred, left the place. On the 8th, one thousand people were being cared for by the relief committee. The river continued to rise on the 9th, and many barns and outbuildings were undermined or floated away. About thirty additional buildings were wrecked on the 11th, and more than one hundred were wrecked on the 12th. The water continued to rise and reached its greatest height on the 14th. On that date two thousand six hundred people appealed to the Commissary Department for relief. A number of additional houses were washed away. In one locality in Germantown an entire square of buildings was carried away. On the 14th, it was estimated that the destruction of property by the flood was twice as great as that caused by the flood of last year.

Aurora, Indiana.—On the 6th the river reached the flood line of 1882, the floor of the iron bridge west of the city being three feet under water. That part of the city between George street and the river was under water. People living in the inundated part of the city removed their effects in time to avoid loss, and all persons living below the flood line of 1883 moved to higher ground. The greater part of the Ohio and Mississippi railroad track, between this city and Lawrenceburg, was under water. At 6 p. m. of the 10th, the water passed the flood line of 1832; At 7 p. m. of the 11th, it passed the flood line of 1883 and continued to rise. On the 12th nearly all houses east of George street were abandoned, and many buildings that withstood the flood of 1883 were raised from their foundations. At 8 p. m. of the 13th, the river was two feet, seven inches above the flood of 1883.

Warsaw, Gallatin county, Kentucky.—On the 6th the river gradually approached the high water mark of 1883. The inhabitants were sheltered in the court house and other public buildings. Much property was saved by being removed to places of safety.

Vevay, Indiana.—The river overflowed its banks at several points in this vicinity on the 5th, compelling the inhabitants of the lower part of the town to abandon their homes. On the 6th the lower part of the town was entirely under water; at 7 a. m. of the 13th the river was six inches above the highest stage of 1883, and continued to rise. Great destruction of property resulted, houses and fences being swept away. After this date the river continued to rise uninterruptedly, and on the morning of the 14th it was sixty-one inches higher than the flood of 1832, sixty-six inches higher than the flood of 1847 and twenty-two inches above the flood of 1883. At 7 a. m. of the 15th the water had receded one inch, and afterwards it continued to fall. By the 26th the water had entirely disappeared from the late inundated portions of the town, leaving evidences of great destruction. Of many buildings only the foundations remained, huge piles of debris had accumulated, fragments of furniture and the bodies of dead animals were scattered around. The only benefit derived from the flood was a deposit of rich alluvial soil varying in depth from ten to eighteen inches.

Carrollton, Carroll county, Kentucky.—About seventy-five dwellings and all of the saw mills and distilleries were flooded on the 6th.

Madison, Jefferson county, Indiana.—On the 6th, all houses along Front street were abandoned and the Jeffersonville, Madison and Indianapolis depot was entirely surrounded by water. The town of Milton, Kentucky, opposite Madison, was almost entirely inundated, and most of the buildings were flooded. The river reached its highest point on the 15th, when it was twenty-seven and one-half inches above the high water mark of 1883.

Louisville, Kentucky.—The river passed the danger line on the 4th. The following telegram from the Chief Signal Officer was received during the night of the 4–5th:

Heavy rains have fallen in the states of the Ohio valley which will cause dangerous floods in the upper Ohio river and its tributaries during Tuesday, Wednesday and Thursday.

On the 6th the following warning was received:

Heavy rains continue in the Ohio valley. The river is rising at all points and is above the danger-line at Pittsburg, Cincinnati, and Louisville. Floods will increase and at the end of the week will reach the mouth of the Ohio river. Give general warning.

On the 7th, residents on the "Point" abandoned their homes, and Shippingport and vicinity was inundated. Cut-off embankment was broken and hundreds of houses were flooded. The river continued to rise and, on the 11th, it was within three feet of high water mark of 1883. The entire wharf in front of the city was under water. On this date the following telegram was received from the office of the Chief Signal Officer:

Rains are indicated for the Ohio valley and Tennessee to-day and to-night. River will rise above the highest water mark of last year at Cincinnati and at points below.

At 9 p. m. of the 13th the river had risen to a height surpassing all previous records. On this date the destruction along the river front was greater than at any time since the beginning of the flood. The brisk wind caused the waves to undermine many substantial buildings during the 13th and 14th. On the latter date Shippingport was almost entirely hidden from view by the flood. The river attained its greatest height, forty-six feet, seven inches, at 9.30 p. m. of the 15th, when it was two feet, two inches above the flood of 1883. The river remained stationary during the night and on the morning of the 16th, it began to fall slowly; after that date it continued falling and on the 25th was again within its banks. During the flood there were five hundred houses on the "Point," three hundred in Shippingport and Portland, and one hundred on the banks of the Beargrass creek, submerged to a greater or less extent. Although the flood rose to a greater height than that of 1883, it did not cause as much damage. Property owners, having had timely warning of the approaching danger, took every precaution to avoid losses, and by this means much property was saved. The total losses sustained are estimated at about $100,000.

New Albany, Indiana.—The river rose steadily during the night of the 11–12th, and the back water from Silver creek

submerged several hundred houses in the northwestern part of the city. Lower Albany was under from ten to twenty feet of water. At 8 p. m. of the 13th, the river was within five inches of the flood of February, 1883. During the night of the 12–13th a number of dwellings and other buildings were floated away. The river reached its maximum height on the afternoon of the 15th, when it was twenty-one inches above the highest point reached last year. On the 18th, the river had declined thirty inches from its highest stage. The damage to property was estimated at from $200,000 to $300,000.

Laconia, Indiana.—The Ohio reached its highest stage on the 16th, when it was twenty inches above the great flood of 1883. The bottom lands were overflowed, the water reaching the second floors of many of the houses, some of which were washed away.

Evansville, Indiana.—On the 13th the river was within seventeen inches of the flood of 1883, but this place suffered no damage. At 10 p. m. of the 15th the river was forty-seven feet, two and one-half inches above low water and within seven inches of the high-water mark of 1883.

Shawneetown, Illinois.—All business was suspended and the entire town was submerged to a depth averaging eight feet on the 15th. Not more than one-fourth of the two thousand inhabitants remained in the town. On the 19th one-half of the frame buildings in the city had been moved from their foundations.

Paducah, Kentucky.—On the 19th the town was completely surrounded by water and one-half of the city was inundated. The damage at this place is estimated at $200,000.

Cairo, Illinois.—The high water of February, 1884, was one-half of an inch, and four inches, respectively, below the high-water marks of 1882 and 1883, while at Mound City, seven miles above Cairo, the high water of February, 1884, exceeded the maximum heights of 1882 and 1883. The flood of February, 1884, did not cause injury to property at Cairo, and all kinds of business, with the exception of railroad traffic, were carried on without interruption. The tracks of all the railroads running out of the city, excepting that of the Illinois Central, were submerged on the 13th, when the river had reached a height of forty-eight feet. The highest water at Cairo reached the tops of the lowest parts of the levees only, and bulkheads were erected at these places. All of the levees at this place have been built higher and wider since the flood of 1883. The flood warnings issued by the Chief Signal Officer were published and given wide circulation.

Memphis, Tennessee.—The river began to overflow in places opposite this city on the Arkansas shore on the 14th; it reached the danger line on the 17th; on the 19th traffic on the Memphis and Little Rock railroad between Hopefield and Madison, Arkansas, was suspended on account of the overflowed condition of the road. At the close of the month the river was one foot and one inch above the danger line, and continued to rise.

Vicksburg, Mississippi.—The river rose steadily after the 6th, passing the danger line on the 16th, and reaching the highest stage of the month on the 29th, when it was three feet, eleven inches above the danger line. On the 25th it was reported that the water had broken the levee three miles below Delta, Louisiana, making a crevasse seven hundred and fifty feet in width. The track of the Vicksburg, Shreveport and Pacific railroad was covered with three inches of water between Mounds and California stations. On the 29th, Kleinston, a suburb of Vicksburg, was overflowed to a depth varying from six inches to two feet.

Floods also occurred during February in various rivers and streams as follows:

Allegheny river.—Oil City, Pennsylvania: the railroads in this vicinity were greatly inconvenienced by land slides and overflowed tracks on the 6th. The flood did not approach within five feet of the high water of 1883.

Conoloquinet creek.—Harrisburg, Pennsylvania: the ice in the creek broke up on the 9th, causing a destructive flood. Four bridges (valued at $80,000), over the creek, between Carlisle and the Susquehanna river, were washed away. The freshet was the most destructive that ever occurred in that locality.

French creek.—Meadville, Crawford county, Pennsylvania: all of the southern and western portions of the city were submerged on the 6th, and the factories in those localities were closed.

Maumee river.—Napoleon, Henry county, Ohio: during the evening of the 6th, the ice broke up in the river and moved out, damaging the bridge to some extent. An ice dam formed eight miles east, causing the river to rise to a point eight inches higher than ever before known. All of the lower part of the town was submerged, the water reaching the second stories of many dwellings. At 6 p. m. of the 7th, the ice dam broke and the water receded rapidly.

Sandusky river.—Upper Sandusky, Wyandot county, Ohio: the heavy rains of the 5th and 6th caused the river to rise to such an extent as to overflow the bottom lands and cause much damage by sweeping away fences, grain stacks, etc.

Blanchard river.—Ottawa, Putnam county, Ohio: the river reached its highest point during the early morning of the 7th, when it was thirty feet, four inches above low water. The damage at this place is comparatively light, but the farmers near the river sustained heavy losses. On the 8th the river had fallen six feet. The total loss caused by the flood is estimated at $2,000.

Cuyahoga river.—Cuyahoga Falls, Summit county, Ohio: the unfinished bridge across the river was swept away by the high water of the 6th.

Hockhocking river.—Nelsonville, Athens county, Ohio: the flood of the 5th and 6th was the most destructive that ever occurred in this vicinity. By the breaking of the levee fully one-third of the city was suddenly submerged, the citizens barely escaping with their lives. Numerous houses were swept from their foundation and carried off. One railroad bridge and fifteen loaded cars were swept away.

Lancaster, Fairfield county, Ohio: the heavy rains of the 5th and 6th flooded the Hockhocking valley to a greater extent than has been known for many years.

Athens, Athens county, Ohio: the river reached its greatest height at noon on the 9th, when a height, nine inches higher than was ever before known, was attained. At 7 p. m. the river had fallen eight inches.

Logan, Hocking county, Ohio: the flood of the 6th and 7th was one of the most destructive ever experienced here. From seventy-five to one hundred houses were partly inundated and much suffering was caused among the inhabitants.

Scioto river.—Columbus, Ohio: the river at 9 p. m. of the 6th, was within one foot of the high-water of February, 1883, and continued rising. The dykes below the city broke during the night, causing about one hundred families to vacate the houses or to remove to the upper stories of the buildings. The losses to manufacturing and other interests were very great.

Circleville, Pickaway county, Ohio: the river reached its highest point on the morning of the 18th, when it was within seven inches of the highest point of last spring.

Reports from Waverly, Pike county, Ohio, on the 10th, stated that the flood in the Scioto river, in that vicinity, was the most destructive ever known. The levee was damaged to the extent of more than $50,000, and a great deal of live stock was drowned. Traffic on the Scioto Valley and Ohio Southern railroads was entirely abandoned on account of the washouts and the loss of bridges. The damage occasioned by the flood in the vicinity of Waverly is estimated at $100,000.

Paint creek.—Chillicothe, Ross county, Ohio: on the 6th the creek rose to a greater height than was ever before known, and everything in the low lands was inundated. The Ohio and Erie canal aqueduct, a structure over the creek which had withstood the freshets of fifty years, was washed away during the afternoon, carrying with it the Scioto railroad bridge located a short distance below. Trains were discontinued on the Toledo, Cincinnati and Saint Louis railroad.

Greenfield, Highland county, Ohio: on the 6th Paint creek

rose to a height fully two feet above any previous flood. At about 11 a. m. the large double-spanned bridge over the creek east of the town gave way. About two miles of the Ohio Southern railroad track below Bainbridge were washed away.

Muskingum river.—Zanesville, Muskingum county, Ohio: the river rose steadily during the 6th and 7th; on the latter date it reached a height within eight inches of the high-water mark of 1860. Half of the eighth ward and many houses in other sections of the city were under water. The river began to fall on the 9th, when the railroads resumed operations. The total losses in Zanesville and vicinity are estimated at $150,000.

Tuscarawas river.—Coshocton, Coshocton county, Ohio: the Tuscarawas and Walhonding rivers on the 6th were within three feet of the flood mark of last February. The farmers in the lowlands suffered heavy losses from the overflow. During the night of the 7th the Tuscarawas river reached the highest point known since the settlement of the country. The residents of the lower part of the town were compelled to move to higher ground.

Newcomerstown, Tuscarawas county, Ohio.—The Tuscarawas river reached a greater height on the 7th than was ever before known.

Canton, Stark county, Ohio.—On the 6th railroad traffic was almost at a standstill, owing to submerged tracks and washouts. Many streets in the northern part of the city were overflowed and rendered impassable.

Massillon, Stark county, Ohio.—The water in this city and vicinity during the evening of the 6th, closely approached the height reached by the great flood of 1883, when the water in the river rose to a greater height than had been known for fifty years. A large part of the town was inundated, and many families were compelled to vacate their houses. All barns and outbuildings on Sippo race were submerged. On the morning of the 7th the river was within seven inches of the greatest height attained in 1883. About twenty-five dwellings, in addito those before reported, were submerged on this date.

Mahoning river.—Youngstown, Mahoning county, Ohio: the river overflowed on the 6th and inundated a part of the town, compelling many families to leave their homes. Several factories were submerged and compelled to suspend work. The railroad track was inundated, preventing the running of trains. This flood was the severest ever known in the Mahoning valley. The river fell one foot during the 8th. The track of the Painesville and Youngstown railroad was completely washed away for a distance of half a mile. No trains passed over the Pittsburg and Lake Erie railroad from the 5th to the 8th.

Warren, Trumbull, county, Ohio: the flood of the 6th was one of the most destructive ever known in the Mahoning valley. A general suspension of business resulted and thousands of men were thrown out of employment.

Miami river.—Dayton, Montgomery county, Ohio: the river at this point continued to rise steadily during the 5th and 6th. On the latter date it rose to within three feet of the highest stage of February, 1883. Numerous cellars along the river were submerged, and the lowlands were overflowed, causing heavy losses to the farmers.

Wabash river.—The entire town of Markle, Huntington county, Indiana, was covered with water on the 6th. An iron bridge over the river, near that place, was swept away during the afternoon.

Cumberland river.—Nashville, Tennessee: during the 10th the water rose nearly to the danger line, compelling a few families in north Nashville to move. The river reached the danger line on the afternoon of the 11th and continued to rise until the afternoon of the 15th, when it reached its highest stage, forty-six feet and eleven inches, or nearly five feet above the danger line. On that date about seventy-five families had abandoned their homes and about one hundred and fifty buildings were under water. The river was fully two and one-half miles in width at a point one and one-half miles below the city. The losses resulting from the overflow are estimated at about $5,000. The river remained above the danger line until the 20th.

Tennessee river.—Chattanooga, Tennessee: the river rose rapidly on the 8th, and continued to rise until the 11th, reaching its highest stage on that date, when it was nearly four feet above the danger-line. The high water caused no damage other than the suspension of travel on the country roads leading into the city.

White river.—Lead Hill, Boone county, Arkansas: more than eight inches of rain fell during the 10th, 11th and 12th. On the 11th the river began to overflow the bottom-lands; it continued to rise during the 12th and 13th, reaching on the latter date a height of two feet above the flood of 1844, and nine feet above the flood of 1873. Many miles of fencing were swept away, houses flooded and cattle drowned.

Alabama river.—Montgomery, Alabama: a very high stage of water was attained on the 20th and 21st, when the lowlands on the northern bank of the river were flooded.

Raritan river.—New Brunswick, Middlesex county, New Jersey: the river rose to a point three feet above high water mark on the 8th. The docks along the river front were submerged, and considerable damage was done to the lumber yards.

James river.—Lynchburg, Virginia: the river rose for several days preceding the 10th, and on that date reached its maximum height. Some inconvenience resulted from the high water, but no damage was done.

Arkansas river.—Little Rock, Arkansas: the river rose rapidly during the 12th, reaching the danger-line at 11 a. m. It continued to rise and on the 14th, several land slides were reported from points along the Fort Smith railroad. The river reached its highest point on the 16th, and fell rapidly on the 18th.

Fort Smith, Arkansas: the river reached the danger-line on the morning of the 12th and on the 13th it was five feet, three inches above the danger line. The Little Rock and Fort Smith, and Saint Louis and San Francisco railroad companies sustained heavy losses by having bridges washed away and the railroad tracks damaged. On the 14th the water was within two feet of the flood of 1844, and six feet above the danger-line.

Red river.—Shreveport, Louisiana: on the 22d, several plantations, both above and below this place, were overflowed. On the 25th, people and stock were brought to this place, by steamer, from the overflowed plantations below. On the 27th, the river reached its highest stage, thirty-two feet and seven inches, which is believed to have been the highest stage since 1849. Silver Lake bottom, near the city, was covered with back-water, and many of the residents of that locality were compelled to leave their homes.

Reports from Fulton, Hempstead county, Arkansas, on the 15th, stated that the river had risen one foot during the preceding twenty-four hours, and that a large area in that vicinity was under water, resulting in the drowning of much stock.

Miscellaneous.—Reports from Sherman, Grayson county, Texas, on the 12th, stated that heavy rains had fallen for several days preceding that date, washing away bridges on the Texas and Pacific railroad at points both east and west of Sherman.

Corsicana, Texas: fully eight inches of rain fell during the three days preceding the 8th. All of the creeks overflowed, and several small bridges on the Texas and Saint Louis railroad, east of Corsicana, were washed away.

Longview, Texas: the heavy rains from the 5th to the 9th flooded the bottom lands and caused many extensive landslides and washouts on the railroads.

Mount Vernon, Knox county, Ohio: during the afternoon of the 6th a bridge over Armstrong river, one mile west, was washed away.

Urbana, Champaign county, Ohio: the Madison bottoms, in the western part of this county, were entirely submerged on the 6th.

San Francisco, California: owing to a heavy rainstorm telegraphic communication with southern California was inter-

rupted for several days after the 17th. Reports from Los Angeles, via Deming and Ogden, on the 20th, stated that a dam on the Los Angeles river broke during the night of the 17–18th, producing the most disastrous flood ever experienced. The lower part of the city was completely inundated and forty buildings were swept away. Hundreds of families were obliged to abandon their homes and seek shelter on the hills. From Los Angeles to Mojave, a distance of one hundred miles, scarcely a mile of the Southern Pacific railroad track remained in place, and from Los Angeles eastward to San Gorgonio the destruction was equally great. The California Southern railroad, from Colton to San Diego, was also washed out. Reports from towns in the southern part of San Joaquin valley stated that the floods in that section were the heaviest ever experienced.

Reports from San Bernardino, on the 21st, stated that the streets were covered with water to a depth of three feet, and that the houses were flooded. The town of Fall Brook was reported to have been entirely washed away. Many of the inhabitants were missing and were supposed to have been drowned. Numerous orange groves and vineyards in the San Gabriel valley were completely destroyed.

Los Angeles, California: careful estimates of the losses caused by the floods in this county place them at $750,000, which will be more than compensated by the benefits done to the wheat and fruit crops.

San Buena Ventura, Ventura county, California: on the 5th the Santa Clara river was higher than it had been known to be for years. Several bridges were washed away and, in some places land slides occurred on the railroads. During the storm preceding the freshet 9.60 inches of rain fell.

Santa Anna, Los Angeles county, California: the rains preceding the 5th were the heaviest that have occurred for several years. For the first time in eight years the water in the Santa Anna river ran into the ocean. All of the small streams in that vicinity were much swollen.

Yuma, Arizona: the railroad tracks west of this place were badly washed by the heavy rains of the 3d, causing delay of trains for two days.

HIGH TIDES.

New York City.—The highest tide that has been known for several years occurred on the 28th. When at its maximum height, at about 9.30 a. m., the railroad tracks at the Erie depot in Jersey City were covered with several inches of water. The cellars along the river front, and particularly those on South street, were flooded.

High tides also occurred as follows:

New River Inlet, North Carolina, 7th, 14th, 17th, 28th.

Cape May, New Jersey, 27th.

Cedar Keys, Florida, 27th.

Narragansett Pier, Rhode Island, 26th, 27th.

LOW TIDES.

New York City.—The strong southwesterly winds of the 29th (low area xiv.) caused the lowest tide that has occurred for several years. Many of the larger vessels along East river front were resting on the bottom of the river. Split rock, off Tompkinsville, which is only seen about once in seven years, was two feet out of water. West Bank, near Swinburne Island, was nearly dry and miles of the beach along the south shore and Great Kills were entirely dry. Much inconvenience was experienced by the ferry boats.

Block Island, Rhode Island. — The strong northwesterly gales of the 29th (low area xiv.), caused very low tides.

Low tides were also reported from the following places:

Narragansett Pier, Rhode Island, 29th.

Point Judith, Rhode Island, 29th.

New Haven, Connecticut, 29th.

Cedar Keys, Florida, 20th.

TEMPERATURE OF WATER.

The temperature of water, as observed in rivers and harbors during February, 1884, with the average depth at which the observations were made and the mean temperature of the air at the various stations, are given in the table below. The highest water temperatures reported during the month, 74°.8 and 77°.6, were observed at Cedar Keys and Key West, Florida, on the 12th and 19th, respectively, and the lowest, 29°.8, was observed at New Haven, Connecticut, on the 4th.

Temperature of water for February, 1884.

STATION.	Temperature at bottom.		Range.	Average depth, feet and inches.	Mean temperature of the air at station.
	Max.	Min.			
	°	°	°	ft. in.	°
Atlantic City, New Jersey	42.0	33.0	9.0	4 1	37.6
Alpena, Michigan*					
Augusta, Georgia	62.5	46.5	16.0	10 7	56.5
Baltimore, Maryland	41.0	33.5	7.5	9 6	42.2
Block Island, Rhode Island	39.0	30.8	8.2	8 3	35.0
Boston, Massachusetts	33.8	30.2	3.6	22 10	31.0
Buffalo, New York*					
Canby, Fort, Washington	48.3	33.4	14.9	17 0	38.2
Cedar Keys, Florida	74.8	46.1	28.7	11 5	63.4
Charleston, South Carolina	60.6	50.6	10.0	40 7	58.7
Chicago, Illinois*					
Chincoteague, Virginia	47.1	33.5	13.6	4 7	41.9
Cleveland, Ohio*					
Detroit, Michigan*					
Delaware Breakwater, Delaware	40.3	33.4	16.9	8 4	39.9
Duluth, Minnesota*					
Eastport, Maine	33.8	32.2	1.6	15 5	24.7
Escanaba, Michigan*					
Galveston, Texas	66.4	51.2	15.2	12 0	60.4
Grand Haven, Michigan‡	32.6	32.1	0.5	19 0	24.8
Indianola, Texas	68.6	51.3	17.3	8 2	60.2
Jacksonville, Florida	66.6	56.0	10.6	18 0	62.1
Key West, Florida	77.6	71.1	6.5	17 8	72.5
Mackinaw City, Michigan*					
Macon, Fort, North Carolina	62.0	49.3	12.7	2 8	52.9
Marquette, Michigan*					
Milwaukee, Wisconsin*					
Mobile, Alabama	59.5	47.2	12.3	15 4	57.3
New Haven, Connecticut	35.4	29.8	5.6	14 11	31.7
New London, Connecticut	37.2	34.5	2.7	12 6	33.6
New York City	35.0	31.5	3.5	16 0	35.1
Norfolk, Virginia	51.0	33.0	18.0	16 10	50.1
Pensacola, Florida	65.1	54.7	10.4	17 4	58.9
Portland, Maine	33.6	30.2	3.4	17 2	29.7
Portland, Oregon	45.4	33.2	12.2	50 7	36.0
Provincetown, Massachusetts	36.9	33.2	3.7	12 9	34.1
Sandusky, Ohio*					
Sandy Hook, New Jersey	39.8	35.7	4.1	1 7	35.8
San Francisco, California	52.3	45.0	7.3	39 6	50.0
Savannah, Georgia	63.8	49.3	14.5	11 2	58.3
Smithville, North Carolina	59.5	50.0	9.5	10 0	54.8
Toledo, Ohio*					
Wilmington, North Carolina	60.0	43.5	16.5	17 7	56.5

*Frozen entire month. ‡Observations interrupted by ice from 1st to 11th, 14th, 15th, 17th, 18th.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for February 1884, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 83.36 per cent. The percentages for the four elements are: weather, 89.40; direction of the wind, 78.48; temperature, 80.84; barometer, 84.53 per cent. By geographical districts they are: for New England, 88.29; middle Atlantic states, 87.13; south Atlantic states, 84.22; eastern Gulf states, 83.04; western Gulf states, 80.46; lower lake region, 86.48; upper lake region, 83.87; Ohio valley and Tennessee, 82.73; upper Mississippi valley, 82.01; Missouri valley, 74.93; north Pacific coast region, 78.12; middle Pacific coast region, 100.0; south Pacific coast region, 81.25. There were eighty-one omissions to predict, out of 3,504 or 2.31 per cent. Of the 3,423 predictions that have been made, one hundred and fifteen, or 3.36 per cent., are considered to have entirely failed; one hundred and thirty-four, or 3.91 per cent., were one-fourth verified; four hundred and twenty-six, or 12.45 per cent., were one-half verified; five hundred and sixty-four, or 16.48 per cent., were three-fourths verified; 2,184, or 63.80 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

Reports from the districts on the Pacific coast were discontinued on the 10th, consequently no predictions for those districts were made after that date.

CAUTIONARY SIGNALS.

During February, 1884, one hundred and seventy-six caution-